

REMARKS

This Response is offered in reply to Office Action mailed June 8, 2003. A petition and fee for a one month time extension are enclosed.

In paragraph 3 of the office action, claims 1-3, 6, and 13 are rejected under 35 USC 103(a) as obvious in view of the Sakai US Patent 4 715 467.

This rejection is believed to be in error. In particular, the '467 patent describes an infinitely variable belt-drive transmission 2, driven pulley 25 and output shaft 33 for transmitting engine power to the main drive wheels on rear axles 39, 40 of a vehicle and a transfer clutch 43 for transmitting engine power to auxiliary driving front wheels when switch 90 is closed to thereby establish a four-wheel drive mode of operation. When switch 90 is opened, a two wheel drive mode of operation is provided and transfer clutch 43 is disengaged.

In the four wheel drive mode, the transfer clutch is controlled by a hydraulic circuit and electrical circuit in a manner to avoid so-called "tight corner braking" during operation of the vehicle. In particular, the electric circuit controls the hydraulic circuit of the transfer clutch in response to engine load in a manner that the transfer clutch engaging torque decreases with a decrease of the engine load. At column 5, lines 43-66, the '467 patent describes determination of the engine torque T_e from a table with reference to engine speed N_e and accelerator pedal position B. However, during the four wheel drive mode, the engine torque T_e is used to determine the clutch torque T_c in Fig. 3b pursuant to the equation at column 7, lines 5-6 of the patent. As a result, the proportion of torque transmitted by clutch 43 to the auxiliary wheels is determined using the torque transmitting ratio K_2 for the rear auxiliary wheels and is controlled by a duty cycle calculated as illustrated in Figure 3b so as to decrease clutch engaging

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pressure as engine torque decreases to avoid "tight corner braking" (column 7, lines 49-56).

The examiner should note that the torque transmitting ratio K_2 for the auxiliary drive wheels is disclosed at column 7, lines 10-12 of the '467 patent as usually being 0.5-0.6 of engine torque T_e .

Applicants believe the examiner will now appreciate that the '467 patent describes a vehicle drive system using the infinitely variable belt-drive transmission 2 and pulley 25 for transmitting engine power to the main drive wheels on rear axles 39, 40 and the transfer clutch 43 for transmitting engine power to auxiliary driving front wheels using the torque transmitting ratio K_2 for the auxiliary drive wheels in a four wheel drive mode in a manner that is utterly unlike and utterly non-suggestive of Applicants' claims 1-3, 6, and 13.

The '467 patent does not remotely suggest a method of controlling a vehicle drive having a 4X4 mode of operation and other modes of operation using an electronic control system providing a torque output in response to driver demand by 1) controlling torque output of one of an engine and transmission of the vehicle when the vehicle is in the 4X4 mode using a calibration table stored in system memory and indicating a relationship of torque output as a function of accelerator pedal position and a speed parameter for reducing sensitivity of the torque output to accelerator pedal position in the 4X4 mode of operation and 2) controlling torque output of one of the engine and the transmission of the vehicle when the vehicle is in one of the other modes of operation using a different calibration table stored in system memory and indicating a different relationship of torque output as a function of the accelerator pedal position and the speed parameter.

Reconsideration of the Section 103 rejection of claims 1-3, 6, and 13 is requested.

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In paragraph 4 of the office action, claim 7 is rejected under 35 USC 103(a) as obvious in view of US Patent 6 146 308.

This rejection is believed to be patently in error and appears to be based on a misunderstanding of the '308 patent. In particular, the '308 patent involves an belt-type continuously variable transmission that self-converges into the gear neutral mode N. Other modes of operation of the transmission are described as a D-range-high mode, D-range-low mode, R-range, N-range, and P-range. The D-range-high mode and the D-range-low mode are not 4X4 low modes of operation. The '308 patent is utterly silent with respect to such 4X4 modes of operation.

The '308 patent does not suggest a method of controlling a vehicle drive having a 4X4 low mode of operation and other modes of operation using an electronic control system providing a torque output in response to driver demand by 1) controlling torque output of one of an engine and transmission of the vehicle when the vehicle is in the 4X4 low mode using a calibration table stored in system memory and indicating a relationship of torque output as a function of accelerator pedal position and a speed parameter for reducing sensitivity of torque output to accelerator pedal position in the 4X4 low mode of operation and 2) controlling torque output of one of the engine and the transmission of the vehicle when the vehicle is in one of the other modes of operation using a different calibration table stored in system memory and indicating a different relationship of torque output as a function of the accelerator pedal position and the speed parameter.

Reconsideration of the Section 103 rejection of claim 7 is requested.

In paragraph 5 of the office action, claim 5 is rejected under 35 USC 103(a) in view of the Sakai US Patent 4 715 467 taken with US Patent 6 549 840.

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The rejection is believed to be in error. The deficiencies of the '467 patent are set forth in detail above. The '840 patent is not believed to be properly combined with the '467 patent given the utterly disparate driving systems involved.

Moreover, even if the teachings of the '467 patent are modified to use engine speed as the speed parameter as incorrectly proposed by the examiner, the combination still would not yield Applicants' claim 5 since the resulting vehicle drive system would use the infinitely variable belt-drive transmission 2 and pulley 25 to transmit engine power to the main drive wheels on rear axles 39, 40 and the transfer clutch 43 to transmit engine power to auxiliary driving front wheels using the above described torque transmitting ratio K_2 for the auxiliary drive wheels in a manner that is utterly unlike and utterly non-suggestive of Applicants' claim 5.

Reconsideration of the Section 103 rejection of claim 7 is requested.

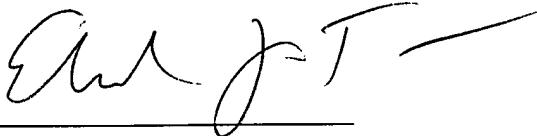
In paragraph 6 of the office action, claims 8-10 and 12 are rejected under 35 USC 103(a) in view of the same references as set forth for rejecting claims 1-2, 5, and 7.

These rejections are believed incorrect for the reasons discussed in detail above as a result.

Reconsideration of the rejections of claims 8-10 and 12 is requested.

Allowance of the pending claims is requested.

Respectfully submitted,



Edward J. Timmer

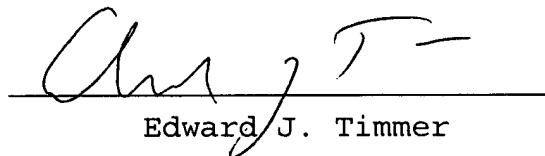
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I hereby certify that this correspondence and enclosures are being deposited with the United States Postal Service under 37 CFR 1.8 as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on October 7, 2004.


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